

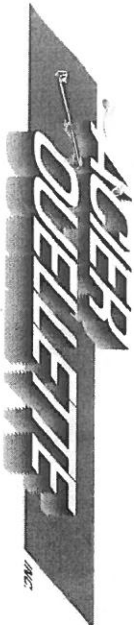


Dart Hawkesbury  
1270 Aberdeen St Hawkesbury, ON K6A 1K7 Canada  
Tel (613) 632-5200

## Purchasing Receipts

PO No	Supplier	Line Item No	Rel No	Terms	Purchased Item	Description	For Part No	Project	Equipment ID	Order Qty	Due Date	Received Quantity	Accounting Job No	Container No	Status	Receive Date	Price/Unit
PO039156	ACI001-VC	1	1	Net 30	MT-HRS-P-0.500	Hot Rolled Steel Plate 0.500" (44W) receive sf				32	3/7/2018	32		S048042	Stock	3/5/2018	\$ 13.17 / sf
		2			M6061T6B0.500X00.500	6061T6 Bar 0.500 X 0.500 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/B OR AMS-QQ-A-225/B OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft				12			S048043	Stock	3/5/2018	\$ 0.86 / ft	
		5			MT-HRS-P-0.250	Hot Rolled Steel Plate 0.250" (44W) : Hot Rolled Steel Plate 0.250" thick				32		32		S048044	Stock	3/5/2018	\$ 6.33 / ft
		6			MT-4140QT-R1.750	AISI 4140 Quenched & Tempered Steel Round Bar 1.750" Dia. : AISI 4140 Q&T Round Bar : MAT'L: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT				12		12		S048045	Stock	3/5/2018	\$ 18.08 / ft
		8			M4140N-R0.750	4140 Steel Round Bar 0.750" receive ft						12		S048046	Stock	3/5/2018	\$ 2.49 / ft
Total:										100		100					

Plex 3/5/2018 4:14 PM Dart.Dubois.Pascal



ACIER QUELLETTE INC.

935, Boul. du Hâvre  
Salaberry de Valleyfield (Québec) J6S 5L1  
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248  
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

## DELIVERY - CLIENT

Copy

CO00076601

### Billed to

DART AEROSPACE LTD  
1270, ABERDEEN ST.  
HAWKESBURY, Ontario, K6A 1K7

### Shipped to

, Ontario,

Att: CHANTAL LAVOIE Tél.: 613-632-5200

Instruction F-M

Delivery Route 5

Page 1

Customer N° CL10001056  
Date 2018/03/01  
Delivery date 2018/03/05  
Your order N° 039156  
Processed by Josianne Bourdon  
Salesman  
Carrier QUELLETTE VALLEYFIELD  
Credit Terme Net 30 Days

Product Description	Weight	Qty	U/M	PCS NB			Internal Use Only				
				CMD	EXP	B/O	IN	I	S	C	OUT
1 PLATE 44W 1/2 (4 X 8) P44-1248 2 X 4' X 4' HEAT : 724995 20100410 COUPE AU FEU FEU 4059 3	652.80	32.00	PI2 \$CLB		2X		32 #2				
		1.00	UN		4'X4'						

Total Weight (Lbs) : 652.80

NIR : R-109516-6

**Conditions :**  
All sold and delivered materials remain the property of "Acier Quellette Inc" until payment is made in full, complete and cashed. All lost materials are at the buyer's expense. The warranty offered by "Acier Quellette Inc." is the same as offered and honored by the manufacturer and his warranty is transferred by "Acier Quellette Inc." to the client. The buyer hereby accepts to respect the following conditions: Net 30 days from billing date and the buyer accepts to pay administration charges of 2% per month (24% per annum) on all past due amounts over 30 days. Any default in respect with this contract will lead to payment by acceleration and permits to the seller, at his choice to claim for the balance due or the repossession of the goods sold. All claims must be made within five (5) days with this document enclosed. Any merchandise that has been damaged, cut or modified cannot be returned. All goods returned must be with our authorization and are subject to a 25% restocking charge.

Prepared By :

Verified By :

Delivered By :

Time

Customer's Signature

Date

Total (\$CAD)



DELIVERY - CLIENT

Copy

CO0007659

ACIER OUELLETTE INC.

935, Boul. du Hâvre  
Salaberry de Valleyfield (Québec) J6S 5L1  
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248  
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

Billed to

DART AEROSPACE LTD  
1270, ABERDEEN ST.  
HAWKESBURY, Ontario, K6A 1K7

Shipped to

, Ontario,  
OUELLETTE VALLEYFIELD

Att: CHANTAL LAVOIE Tél.: 613-632-5200

Credit Terme Net 30 Days

Instruction F-M

Delivery Route 5

Page 1

Product Description	Weight	Qty	U/M	PCS NB			Internal Use Only			
				CMD	EXP	B/O	IN	I	S	C
1 SQUARE ALU 1/2 6061-T6 * CAL-12 1778 1 X 12' HEAT: 33931	3.60	12.00	PI_\$CLB		1 X 20'		20' 11 11 9-89			MAR 04 2018
2 PLATE 44W 1/4 (4 X 8) P44-1448 4074 2 X 4' X 4' HEAT: W7G550 SHEAR CUT 2 SHEAR	326.40	32.00	PI2_\$CLB UN		2 X 4' X 4'		32' 11 11 9-89			MAR 04 2018
3 ROUND 4140 HEAT TREAT 1 3/4 (R) * R4140-134H 4911 1 X 12' HEAT: 75069193	98.14	12.00	PI_\$CLB		1 X 12'		12' 11 11 9-89			MAR 04 2018

NIR : R-109516-6

Next Page.

# DELIVERY - CLIENT

Copy

CO0007659

ACIER OUELLETTE INC.

935, Boul. du Havre  
Salaberry de Valleyfield (Québec) J6S 5L1  
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248  
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

Customer N°

CLI0001056

Date

2018/03/01

Delivery date

2018/03/05

Your order N°

039156

Processed by

Josianne Bourdon

Salesman

Carrier

OUELLETTE VALLEYFIELD

Net 30 Days

Credit Terme

Page 2

## Shipped to

DART AEROSPACE LTD

1270, ABERDEEN ST.  
HAWKESBURY, Ontario, K6A 1K7

, Ontario,

Att : CHANTAL LAVOIE Tél.: 613-632-5200

Delivery Route 5

Instruction F-M

Product Description	Weight	Qty	U/M	PCS NB			Internal Use Only		
				CMD	EXP	B/O	IN	I	S C
COUPE A LA SCIE SCIE 1		1.00	UN						
4 ROUND 4140 HEAT TREAT 3/4 (R) * R4140-34H 4949 1 X 12' R/L HEAT: M52574	18.02	12.00	PI_\$CLB						
				1 X			1 X 20 1/4	X	8 1/2"
				12'			12'		

Total Weight (Lbs) : 446.16

NIR : R-109516-6

Conditions : All sold and delivered materials remain the property of "Acier Ouellette Inc." until payment is made in full, complete and cashed. All lost materials are at the buyer's expense. The warranty offered by "Acier Ouellette Inc." is the same as offered and honored by the manufacturer and his warranty is transferred by "Acier Ouellette Inc." to the client. The buyer hereby accepts to respect the following conditions: Net 30 days from billing date and the buyer accepts to pay administration charges of 2% per month (24% per annum) on all past due amounts over 30 days. Any default in respect with this contract will lead to payment by acceleration and permits to the seller, at his choice to claim for the balance due or the repossession of the goods sold. All claims must be made within five (5) days with this document enclosed. Any merchandise that has been damaged, cut or modified cannot be returned. All goods returned must be with our authorization and are subject to a 25% restocking charge.

Total (\$CAD)

Prepared By : SV/MT

Verified By : NM

Delivered By : [Signature]

Time

Y M D  
18 03 05

Date

Customer's Signature





Dart Aerospace Ltd.  
1270 Aberdeen St  
Hawkesbury, ON  
K6A 1K7  
Canada

Tel (613) 632-5200

# **PURCHASE ORDER** **PO039156**

**Supplier:** ACI001-VC  
Acier Ouellette Inc.  
935 Boul. Du Havre  
Valleyfield  
QC  
J6S 5L1 Canada  
Phone: 800 667 4248  
Fax: 450 377 5696

**PO No:** PO039156

**PO Date:** 3/1/18

**Due Date:** 3/7/18

**Purchase Order**

**Revision:**

**Revision Date:**

**Ship-To Contact:** Lavoie, Chantal  
Phone: clavoie@dartaero.com

**Ship To:** 1270 Aberdeen Street  
Hawkesbury  
ON  
K6A 1K7 Canada  
Phone: 613-632-5200

**Via:** Ground

**Pynt Terms:** Net 30

**Freight Terms:**

**Special Comments:** quote no: sou0088895, sou0088998

REVISED

E-MAILED  
MAR 02 2018

## **Items**

Line Item	Part	Supplier Part No	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	MT-HRS-P-0.500		Hot Rolled Steel Plate 0.500" (44W) receive sf	Firmed	3/7/18	32 sf	0 sf	32 sf	\$13.167187/sf	\$421.35
Line Item Note note: please cut sheet in two										
2	M6061T6B0.500X00.500		6061T6 Bar 0.500 X 0.500 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft	Firmed	3/7/18	12 ft	0 ft	12 ft	\$0.8575/ft	\$10.29
3	MT-4140-B-2.250X8.000		AISI 4140 Steel Bar : Material: AISI 4140 STEEL BAR AS PER ASTM A29, AMS 6349, AMS 6382, AMS 6529, MIL-S-5626 MIN. ROCKWELL C = 28 RC MAX. ROCKWELL C = 32 RC NOTE: cut material in 12" lenght	Firmed	3/16/18	6 ft	0 ft	6 ft	\$153.73166/ft	\$922.39

Items										
Line Item	Part	Supplier Part No	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
4	MT-4140-B-0.500x3.500		4140 Steel Bar 0.500 X 3.500 : AISI 4140 STEEL BAR PER ASTM A29, AMS 6349, AMS 6382, AMS 6529, MIL-S-5626 MINIMUM ROCKWELL C = 28 RC MAXIMUM ROCKWELL C = 32 RC receive ft	Firmed	3/7/18	6 ft	0 ft	6 ft	\$27.50/ft	\$165.00
5	MT-HRS-P-0.250		Hot Rolled Steel Plate 0.250" (44W) : Hot Rolled Steel Plate 0.250" thick	Firmed	3/7/18	32 ft	0 ft	32 ft	\$6.33188/ft	\$202.62
Line Item Note note: please cut sheet in two										
6	MT-4140QT-R1.750		AISI 4140 Quenched & Tempered Steel Round Bar 1.750" Dia. : AISI 4140 Q&T Round Bar : MAT'L: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT	Firmed	3/7/18	12 ft	0 ft	12 ft	\$18.07666/ft	\$216.92
7	MT-4140QT-R2.375		MT-4140 QT-R2.375 : MAT'L: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT	Firmed	3/7/18	12 ft	0 ft	12 ft	\$46.66666/ft	\$560.00
8	M4140N-R0.750		4140 Steel Round Bar 0.750" receive ft	Firmed	3/7/18	12 ft	0 ft	12 ft	\$2.4925/ft	\$29.91
9	M6061T6S2.250X13.500		6061-T6 Sheet 2.250" Thick x 13.500" Wide : MATERIAL: 6061-T6/T62 ALUMINUM SHEET AS PER QQ-A-250/11 OR AMS-QQ-A-250/11 OR AMS 4025 OR AMS 4027 OR ASTM B209	Firmed	3/7/18	6 ft	0 ft	6 ft	\$171.315/ft	\$1027.89
Grand Total:										\$3,556.37

## Order Notes

**Order Notes**

## Procurement Quality Clauses

A005 right of entry  
A012 chemical and physical test report  
A016 personnel qualification  
A017 raw material identification (as applicable)  
A026 certification of material conformance  
A041 quality management system  
A042 dart notification by supplier  
A043 retention of quality documents  
  
A048 counterfeit parts avoidance, detection, mitigation and disposition program  
  
A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit [www.dartaerospace.com](http://www.dartaerospace.com) for further explanation.

*Plex 3/2/18 8:40 AM dart.lavoie.chantal*

**ACIER OUELLETTE INC.**

935, Boul. du Havre  
Salaberry de Valleyfield (Québec) J6S 5L1  
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248  
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

**Quotation****SOU0088998****Billed to**

DART AEROSPACE LTD  
1270, ABERDEEN ST.  
HAWKESBURY, Ontario, K6A 1K7

**Shipped to**

, Ontario,

Att : CHANTAL LAVOIE Tél.: 613-632-5200

**Customer N°** CLI0001056  
**Date** 2018/02/27  
**Revision N°** 0  
**Prices valid until** 2018/03/06  
**Your Order N°**  
**Processed by** Josianne Bourdon  
**Salesman** JOSIANNE  
**Carrier** OUELLE SDV  
**Credit Terms** Net 30 Days  
**Page** 1

Product N° and description	Weight	Qty	U/M	Qty	U/M	Price	Pcs Nb	Price	Amount
PLATE 44W 1/2 (4 X 8) P44-1248 4059 2 X 4' X 4' STOCK COUPE AU FEU FEU 3	652.80	32.00	PI2_\$CLB	1.00	UN		2.00	210.675	421.35
		1.00	UN	1.00					
SURCHARGE ENERGETIQUE FRAIS_ENERGETIQUE			\$						3.95

MT-HRS-P-0.500  
x32.  
sent in hold

OK  
13.167187 aSF

**Total Weight (Lbs)** 652.80**Important**

This offer is based on availability and current pricing conditions that may be revised upon reception of the order.

This offer is subject and conditional to credit approval.

Approved and Accepted by :

Date :

**Sub-total** 425.30

TVH-13 • 55.29

**Total (\$CAD)** 480.59

**ACIER OUELLETTE INC.**

935, Boul. du Havre

Salaberry de Valleyfield (Québec) J6S 5L1

Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248

Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

**Quotation****SOU0088895****Billed to**

DART AEROSPACE LTD

1270, ABERDEEN ST.  
HAWKESBURY, Ontario, K6A 1K7**Shipped to**

, Ontario,

Att : CHANTAL LAVOIE Tél.: 613-632-5200

**Customer N°**

CLI0001056

**Date**

2018/02/27

**Revision N°**

0

**Prices valid until****2018/03/06****Your Order N°****Processed by**

Josianne Bourdon

**Salesman**

JOSIANNE

**Carrier**

OUELLE SDV

**Credit Terms**

Net 30 Days

**Page**

1

Product N° and description	Weight	Qty	U/M	Qty	U/M	Price	Pcs Nb	Price	Amount
SQUARE ALU 1/2 6061-T6 * CAL-12 <b>1778</b> 1 X 12' STOCK	3.60	12.00	PI_\$CLB	12.00	PI		1.00	10.290	10.29
ALU PLATE 2 1/4 6061-T651 RANDOM PAL-2146061-V <b>7464</b> 2 X 13 1/2" X 72" 3-4 DAYS	433.76	13.50	PI2_\$CLB	13.50	PI2		2.00	1 027.890	2 055.78
PLATE 4140 H.T. 1/2 <b>N</b> 1 X 3 1/2" X 72" 7-10 DAYS	0.00	1.00	UN	1.00	UN		1.00	165.000	165.00
PLATE 44W 1/4 (4 X 8) P44-1448 <b>4074</b> 2 X 4' X 4' STOCK SHEAR CUT SHEAR <b>2</b>	326.40	32.00	PI2_\$CLB	1.00	UN		2.00	101.310	202.62
ROUND 4140 HEAT TREAT 1 3/4 (R) * R4140-134H <b>4911</b> 1 X 12' STOCK COUPE A LA SCIE SCIE <b>1</b>	98.14	12.00	PI_\$CLB	12.00	PI		1.00	216.920	216.92
ROND 4140 HT 2 3/8" DIA <b>N</b> 1 X 20' R/L 3-4 DAYS	0.00	1.00	UN	1.00	UN		1.00	560.000	560.00
PLATE 4140 HT 2 1/4 NS P4140-214H <b>9352</b> 1 X 8" X 72" 7-10 DAYS	367.56	4.00	PI2_\$CLB	4.00	UN_\$UN		1.00	922.390	922.39
ROUND 4140 HEAT TREAT 3/4 (R) * R4140-34H <b>4949</b> 1 X 12' R/L STOCK	18.02	12.00	PI_\$CLB	12.00	PI		1.00	29.910	29.91

Date :

**Next Page...**

Date : \_\_\_\_\_ Total (\$CAD) 4 708.55

## MATERIAL RECEIPT INSPECTION FORM

MATERIAL: MT-HRS-P-0.500  
 DATE: MAR 04 2018

PO / BATCH NO.: 039156/5048042

MATERIAL CERT REC'D: YES  
 QUANTITY RECEIVED: 32 PIR  
 QUANTITY INSPECTED: 32 PIR  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: 0.500  
 THICKNESS RECEIVED: 0.500  
 SHEET SIZE ORDERED: 48 4x4  
 SHEET SIZE RECEIVED: 4x4

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
CORRECT FINISH	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	
CORROSION	<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
CORRECT GRAIN DIRECTION	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	
CORRECT MATERIAL PER M-DRAWING	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<u>Astm A572</u>
CORRECT THICKNESS	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	
PHOTO REQUIRED	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
CORRECT REF # TO LINK CERT	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	<u>Heat# 724995 20100410</u>
CORRECT MATERIAL IDENTIFICATION	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	
CORRECT M# ON THE MATERIAL	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
DOES THIS REQUIRE AN EXTRUSION REPORT	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>DAS 11</u> DATE: <u>9-89 MAR 04 2018</u>	SIGNED OFF BY: <u>See attached</u> DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

Hot Rolled Steel Plate

Per MT-HRS-P

It is acceptable to receive 44W Hot Rolled Steel Plate per the manufacturer's specification ASTM A572, 300W. (Equivalent to 44W)

The MT-HRS-P drawing will be updated to reflect this.

A handwritten signature in cursive script, appearing to read "M Lee".

Michael Lee





4061 00.766001

GLT DEMİR VE ÇELİK FABRİKALARI T.A.Ş.  
STANDING NO: 3 500 000 000 TL  
ÜRETİM : ERDEMİR

KİŞİLER  
İÇERİŞİ  
78603208709  
12.700 X 2438 X 6095 (0.500 X 96 X 240 INCH)  
TANDEM & GRADE  
ÜRETİM TİPİ & TANIMLAMA LKK : HOT ROLLED HEAVY PLATE WITH MILL EDGE

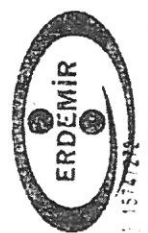
TEST CERTIFICATE  
EN 10204 : 2004 TYPE 3.1

DATE : 18/10/2017  
CERTIFICATE NO : 71612651

LOT NO:1 NO MERCURY COMPOUNDS NO WELD REPAIR  
FULLY KILLED AND FINE GRAIN PRACTICE

PRODUCT INFORMATION				MECHANICAL PROPERTIES				CHEMICAL COMPOSITION, CAST ANALYSIS																		
ET NO/WEIGHT (MT)	HEAT NO	COIL or PLATE NO	P.S or P.P	TENSILE TEST		BEND or TEST	Ag or BH	Y/T or n	IMPACT TEST, Joule	POSITION	1	2	3	AVR	TEMP °C	YIELD N/MM2	C %	MN %	P %	S %	SI %	AL %	CU %	NI %	V %	N PPM
				STRENGTH N/MM2	EL N/MM2																					
339595 12.270	725106	7023018046L010	8	359.1	569.8	34	TT										0.191	1.223	0.019	0.003	0.194	0.030	0.023	0.042	0.076	43
	725106	725106202001101		399.1	569.8	34	TT										0.191	1.223	0.019	0.003	0.194	0.030	0.023	0.042	0.076	43
	725106	725106202001201		400.1	560.0	36	TT										0.191	1.223	0.019	0.003	0.194	0.030	0.023	0.042	0.076	43
	725106	725106202003101		400.1	560.0	36	TT										0.191	1.223	0.019	0.003	0.194	0.030	0.023	0.042	0.076	43
	725106	725106202003201		399.1	569.8	34	TT										0.191	1.223	0.019	0.003	0.194	0.030	0.023	0.042	0.076	43
	725106	72510620200601101		399.1	569.8	34	TT											0.191	1.223	0.019	0.003	0.194	0.030	0.023	0.042	0.076
339600 9.140	735248	735248201002101		409.9	573.7	36	TT										0.197	1.445	0.018	0.002	0.204	0.025	0.025	0.042	0.073	54
	735248	735248201002201		409.9	573.7	36	TT										0.197	1.445	0.018	0.002	0.204	0.025	0.025	0.042	0.073	54
	724995	7023018111L010	5	407.0	584.5	34	TT										0.195	1.339	0.021	0.003	0.220	0.030	0.028	0.042	0.075	64
	724995	724995201001101		407.0	584.5	34	TT										0.195	1.339	0.021	0.003	0.220	0.030	0.028	0.042	0.075	64
	724995	724995201001201		400.1	576.5	36	TT										0.195	1.339	0.021	0.003	0.220	0.030	0.028	0.042	0.075	64
	724995	724995201002101		400.1	576.5	36	TT										0.195	1.339	0.021	0.003	0.220	0.030	0.028	0.042	0.075	64
339501 6.060	724995	724995201003101		407.0	584.5	34	TT										0.195	1.339	0.021	0.003	0.220	0.030	0.028	0.042	0.075	64
	724995	724995201003201		407.0	584.5	34	TT										0.195	1.339	0.021	0.003	0.220	0.030	0.028	0.042	0.075	64
	724995	70230181112L610	4	400.1	576.5	36	TT										0.195	1.339	0.021	0.003	0.220	0.030	0.028	0.042	0.075	64
	724995	724995201004101		400.1	576.5	36	TT										0.195	1.339	0.021	0.003	0.220	0.030	0.028	0.042	0.075	64
724995	724995201004201		409.9	573.7	36	TT											0.197	1.445	0.018	0.002	0.204	0.025	0.025	0.042	0.073	54
735248	735248201004101		409.9	573.7	36	TT											0.197	1.445	0.018	0.002	0.204	0.025	0.025	0.042	0.073	54

MANUFACTURER HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MADE BY THE BASIC OXYGEN PROCESS AND TESTED IN ACCORDANCE WITH THE RULES OF EN 10204 : 2004 TYPE 3.1 WITH SATISFACTORY RESULTS



Tic. Sic. M. Middle, E. End. T. Transverse L. Longitudinal S. Edge of Slice P.P. Edge of Plate  
İstanbul Head Office: 0352 0006 4200-0000 Trade Registry: İstanbul (Department) 87553 Trade Registry Number (English): 87553  
Office: İstanbul Barışçılar Mah. Arslan Sok. No: 6 34745 Başkent İSTANBUL - TÜRKİYE

## MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M6061 T6 B0.500x00.500

PO / BATCH NO.: 039156 / 5048043

DATE: MAR 04 2018

MATERIAL CERT REC'D: yes

THICKNESS ORDERED: 0.500

QUANTITY RECEIVED: 20'

THICKNESS RECEIVED: 0.500

QUANTITY INSPECTED: 20'

SHEET SIZE ORDERED: N/A

QUANTITY REJECTED: 0

SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	(N)	
CORRECT FINISH	(Y)	N	
CORROSION	Y	(N)	
CORRECT GRAIN DIRECTION	(Y)	N	
CORRECT MATERIAL PER M-DRAWING	(Y)	N	<u>A57m B221</u>
CORRECT THICKNESS	(Y)	N	
PHOTO REQUIRED	Y	(N)	
CORRECT REF # TO LINK CERT	(Y)	N	<u>Heat # 33931</u>
CORRECT MATERIAL IDENTIFICATION	(Y)	N	
CORRECT M# ON THE MATERIAL	(Y)	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	(N)	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	(N)	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)	
INSPECTED BY: <u>DAS</u> <u>11</u>	SIGNED OFF BY: _____		
DATE: <u>9-89 MAR 04 2018</u>	DATE: _____		

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

# SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR

SPECIFICATION: QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116)  
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)  
OR ASTM B211 OR ASTM B221

PART NUMBER: M6061T6B | T.TTT | X | WW.WWW | THICK | WIDTH

WHERE "T.TTT" = THICKNESS IN INCHES  
"WW.WWW" = WIDTH IN INCHES

E.G. 1.0" X 12.0" BAR = M6061T6B1.000X12.000

RELEASED  
2009-09-03  
PMP

B	REMOVE QQ-A-250/11 OPTION, REFORMAT NOTES, ADD ASTM B211/B221 (ZN D7-1)	CP	09.07.13
A	NEW ISSUE	DS	01.06.08
REV.	DESCRIPTION	BY	DATE
DESIGN	DS		
DRAWN	DS		
CHECKED	DS		
MFG. APPR.	M6061T6B		
APPROVED			
DE APPR.			
DATE	09.07.13		
DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA		REV. B	
DRAWING NO.		SHEET 1 OF 1	
TITLE		SCALE	
6061-T6 BAR		NTS	
COPYRIGHT © 2001 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT WAS SPECIFICALLY PREPARED.			

## MATERIAL RECEIPT INSPECTION FORM

MATERIAL: M4140N-R0.750  
 DATE: MAR 04 2018

PO / BATCH NO.: 039156/5048046

MATERIAL CERT REC'D: Yes  
 QUANTITY RECEIVED: 12'  
 QUANTITY INSPECTED: 12'  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: 0.750  
 THICKNESS RECEIVED: 0.750  
 SHEET SIZE ORDERED: N/A  
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y (N)	
CORRECT FINISH	(Y) N	
CORROSION	Y (N)	
CORRECT GRAIN DIRECTION	(Y) N	
CORRECT MATERIAL PER M-DRAWING	(Y) N	<u>Astm A29</u>
CORRECT THICKNESS	(Y) N	
PHOTO REQUIRED	Y (N)	
CORRECT REF # TO LINK CERT	(Y) N	<u>Heat # M52574</u>
CORRECT MATERIAL IDENTIFICATION	(Y) N	
CORRECT M# ON THE MATERIAL	(Y) N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y (N)	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y (N)	

CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>DAS</u> <u>11</u> DATE: <u>9-89</u> MAR 04 2018	SIGNED OFF BY: _____ DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

PURCHASE MATERIAL :    AISI 4140 / 4142 STEEL BAR  
MINIMUM ROCKWELL C = 28 Rc  
MAXIMUM ROCKWELL C = 32 Rc

SPECIFICATION:             A29    ASTM A29, AMS 6349, AMS 6382, MIL-S-5626, MIL-S-24093

PART NUMBER:             MT-4140-B-[T.TTTT] x [W.WWWW]  
WHERE "T.TTTT" = THICKNESS IN INCHES  
WHERE "W.WWWW" = WIDTH IN INCHES

EX. 4.0" x 6.0" BAR = MT-4140-B-4.000x6.000

TITLE	PART NO.		REV	C
	AISI 4140 / 4142 STEEL BAR			
				
HEADQUARTERS: CHICAGO, ILLINOIS CHICAGO, ILLINOIS 60606-4000 TEL: 708/487-8000 FAX: 708/487-8001 E-MAIL: SALES@DARTAEROSPACE.COM WWW.DARTAEROSPACE.COM				
TOOL NO.		MT-4140-B		
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES INTERPRET PER ASME Y14.5-2000 DIMENSIONS APPLY AFTER FINISHING				
DESIGNED BY:	INTALS AND DATE	TOLERANCES:		
DRAWN BY:	MM 12/13/2017	FRACTIONS $\pm .010$		
CHECKED BY:	MM 02/14/2018	ANGLES $\pm .1$		
APPROVED BY:	MM 02/14/2018	SURFACE ROUGHNESS		
APPROVED BY:	MM 02/14/2018	SCALE: NTS		SHEET 0F 1
THIS DOCUMENT IS THE PROPERTY OF DART AEROSPACE. IT IS TO BE USED FOR THE PURPOSES SPECIFIED AND IS NOT TO BE REPRODUCED OR COPIED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF DART AEROSPACE.				

## MATERIAL RECEIPT INSPECTION FORM

MATERIAL: MT-4140QT-RL750  
 DATE: MAR 04 2018

PO / BATCH NO.: 039156/5048049

MATERIAL CERT REC'D: yes  
 QUANTITY RECEIVED: 12  
 QUANTITY INSPECTED: 12  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: 1.750  
 THICKNESS RECEIVED: 1.750  
 SHEET SIZE ORDERED: N/A  
 SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y (N)	
CORRECT FINISH	(Y) N	
CORROSION	Y (N)	
CORRECT GRAIN DIRECTION	(Y) N	
CORRECT MATERIAL PER M-DRAWING	(Y) N	A304
CORRECT THICKNESS	(Y) N	
PHOTO REQUIRED	Y (N)	
CORRECT REF # TO LINK CERT	(Y) N	Heat # 75069193
CORRECT MATERIAL IDENTIFICATION	(Y) N	
CORRECT M# ON THE MATERIAL	(Y) N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y (N)	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y (N)	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>DAS 11</u> DATE: <u>9-8 MAR 04 2018</u>	SIGNED OFF BY: _____ DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in



DESIGN #	DRAWN BY #	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED #	APPROVED #	DRAWING NO. M4140H-R	REV. A SHEET 1 OF 1
DATE 05.02.21		TITLE 4140 ROUND BAR	SCALE 1:1
A	05.02.21	NEW ISSUE	

PURCHASE MATERIAL: AISI 4140H ROUND BAR

PER AISI 4140 OR ASTM A304-02 / -A-434-BC /

-A193-03-GRADE-B7 / -A29-03 / -A322-91 OR

UNS # - G41400

MINIMUM ULTIMATE TENSILE STRENGTH = 100 ksi

MINIMUM YIELD TENSILE STRENGTH = 66 ksi

PART NUMBER: M4140H-R | D.DDD | WHERE D.DDD = DIAMETER IN INCHES  
DIA.

EG.  $\frac{7}{8}$ " ROUND BAR = M4140H-R0.875

RELEASED  
05 03 25 #

Copyright © 2005 by DART AEROSPACE LTD

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

# MATERIAL RECEIPT INSPECTION FORM

MATERIAL: MEHRP. 0.250  
 DATE: MAR 04 2018

PO / BATCH NO.: 039156/5048044

MATERIAL CERT REC'D: Yes  
 QUANTITY RECEIVED: 32<sup>pi</sup>2  
 QUANTITY INSPECTED: 32<sup>pi</sup>2  
 QUANTITY REJECTED: 0

THICKNESS ORDERED: 0.250  
 THICKNESS RECEIVED: 0.250  
 SHEET SIZE ORDERED: 4x4  
 SHEET SIZE RECEIVED: 4x4

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	N	
CORRECT FINISH	Y	N	
CORROSION	Y	N	
CORRECT GRAIN DIRECTION	Y	N	
CORRECT MATERIAL PER M-DRAWING	Y	N	44W
CORRECT THICKNESS	Y	N	
PHOTO REQUIRED	Y	N	
CORRECT REF # TO LINK CERT	Y	N	Heat # W-76550
CORRECT MATERIAL IDENTIFICATION	Y	N	
CORRECT M# ON THE MATERIAL	Y	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	N	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	N	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>DAS</u> <u>11</u> DATE: <u>9-89 MAR 04 2018</u>	SIGNED OFF BY: _____ DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in



8 7 6 5 4 3 2 1

REV.	DESCRIPTION	ECN #	DATE	BY	APPROVED
B	REMOVED LENGTH AND WIDTH DIMENSIONS	17-675	26/09/2017	SAC	WM

## SPECIFICATION CONTROL DRAWING

### PURCHASE MATERIAL:

### SPECIFICATION:

### PART NUMBER:

### EXAMPLE:

HOT ROLLED STEEL PLATE

ASTM A36 OR ASTM A1011 OR 44W OR ASTM A1018

MT-HRS-P-[T.TTT]

WHERE T.TTT IS PLATE THICKNESS IN INCHES

MT-HRS-P-0.750

TOLERANCES PER MANUFACTURER SPECIFICATIONS



TITLE		HOT ROLLED STEEL PLATE	
DWG NO.	MT-HRS-P	REV	B
DESIGN BY:	SAC 9/8/2017	XXX ± .05	FRACTIONS ± 1/8
DRAWN BY:	SAC 09/27/2017	XX ± .01	ANGLES ± 1°
CHECKED:	VM 09/27/2017	X ± .01	SURFACES ± 1/4
APPROVED:	09/27/2017	1. UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.	
DATE:	9/27/2017	2. UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.	
SCALE:	NTS	3. DIMENSIONAL LIMITS APPLY AFTER PLATING.	
WEIGHT:	N/A	SHEET 1 OF 1	
COPYRIGHT © 2017 BY DART AEROSPACE LTD.			
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF DART AEROSPACE LTD.			

# BON DE LIVRAISON

✓ K-1407  
49224

**VENDU À**  
ACIERS TRANSBEC (1997) LTEE  
4054, BOUL. LE CORBUSIER  
#201  
LAVAL, QC  
H7L 5R2  
NO CLIENT: 3693

**LIVRÉ À**  
ACIER OUELLETTE  
22, BOUL. J-F KENNEDY  
ST-JEROME, QC J7Y 4B6  
NO CLIENT: L-3693-3

NO DU BON	DATE DE LIVRAISON
115350	29/Sep/16
NIR:	NO DE TELEPHONE DU CLIENT:
R-015478-2	450-963-3693
NO COMMANDE CLIENT:	REPRESENTANT:
OU-46506	Guillaume Morin
CHAUFFEUR:	NO COMMANDE EXTRUDEX:
JIMMY AYOTTE	100655

NO ITEM	NO DE FILIERE	NO PIÈCE CLIENT	DESCRIPTION ALLIAGE / TREMPAGE	LONGUEUR	FINITION	COMMANDE CLIENT NB PIÈCES	À VENIR NB PIÈCES	NO TICKET NB PESÉES	EN LIVRAISON NB PIÈCES	%
30	SA00503		TIGE CARREE 1/2" 6061/T6	6096mm	NATUREL MILL	186 500	0 0	383762	190 514	100.0%
Sous-Total:							1	190 514		

## MILL TEST (Tensile Properties of Aluminum)

### 3 MILL TEST + CERT. CONFORMITE

Test Date.: 23/Sep/16

Order No.	Alloy	Temper	Yield (ksi)	Ultimate Tensile (ksi)	Total Elongation (%)	Hardness (Rockwell E)	Conductivity %	Report No.
100655-30-1A1	6061	T6	39.3	43.7	16.65	92.10		6163

## Certificate of compliance (Certificat de conformité)

Normes: (ANSI H35.1-1997) & (ASTM B221)

Order No. Hardness (Webster) #1 #2 Cast No. CAST CHEMICAL COMPOSITION:

100655-30-1A	15	15	33931	Al	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	B	Zr	Bi	Pb	Sn	Sr	Co
				98.01	0.57	0.23	0.19	0.07	0.84	0.05	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

25 JFK

VÉRIFICATION DE MATÉRIEL  
DATE 30/09/16  
VÉRIFIÉ PAR

SIGNATURE  
CLIENT:

# SSAB

## Test Certificate

1051 Tapscott Road, Toronto, ON M1X 1A1, CA

Form TCI: Revision 2: Date 23 Apr 2014

Customer:  
LES ACIERS TRANSBEC LTÉE  
4054 BOUL. CORBUSIER #201  
L'AVAIL  
PQ H7LSR2

Customer P.O. No.: OU-48320  
Product Description: CSA G40.21(2013) 44W/800W / ASTM A36(14)  
A709(16A)36/ASME SA36(17)

Mill Order No.: 41-514679-01  
Shipping Manifest: TT080403  
Ship Date: 11 Sep 17  
Cert Date: 11 Sep 17  
Cert No: 021136814  
(Page 1 of 1)

Size: 0.250 X 96.00 X 240.0 (IN)

Tested Pieces				Tensiles				Charpy Impact Tests							
Heat Id	Piece Id	Tested Thickness	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elong 2in 8in	Tst Dir	Hardness	Abs. Energy (FTLB) 1 2 3 Avg	% Shear 1 2 3 Avg	Tst Temp	Tst Dir	Tst Siz (mm)	BDWTT Temp %Shr
A7H022	0184	0.254 (T.L.C)	L	58	75		28	T							
A7H022	0185	0.254 (T.L.C)	L	59	80		26	T							
A7H056	0294	0.253 (T.L.C)	L	59	75		28	T							
B7H542	0204	0.253 (T.L.C)	L	51	72		25	T							
B7H542	0206	0.253 (T.L.C)	L	64	75		29	T							
E7G046	0966	0.253 (T.L.C)	L	56	75		25	T							
E7G046	0966	0.253 (T.L.C)	L	67	75		25	T							
E7G046	0966	0.253 (T.L.C)	L	53	71		31	T							
E7G046	0966	0.253 (T.L.C)	L	64	73		27	T							
E7G046	0966	0.253 (T.L.C)	L	58	72		31	T							
E7G046	0966	0.253 (T.L.C)	L	60	71		25	T							
E7G046	0966	0.253 (T.L.C)	L	51	71		27	T							
E7G046	0966	0.253 (T.L.C)	L	59	70		25	T							
W7G550	0243	0.253 (T.L.C)	C												

### Chemical Analysis

Heat Id	C	Mn	P	S	Si	Total Sol Al	Cu	Ni	Cr	Mo	Cb	V	Ti	B	N	ORGN
A7H022	.16	.82	.017	.003	.06	.028	.026	.27	.11	.03	.001	.005	.007	.0001	.0081	CAN
A7H056	.15	.81	.012	.001	.07	.030	.026	.34	.08	.02	.001	.005	.006	.0001	.0081	CAN
B7H542	.15	.82	.016	.002	.06	.026	.024	.27	.13	.03	.001	.003	.007	.0001	.0077	CAN
E7G046	.15	.82	.011	<.001	.03	.034	.032	.28	.14	.05	.001	.003	.017	.0001	.0084	CAN
W7G550	.16	.82	.009	.005	.03	.034	.032	.23	.13	.02	.001	.003	.018	.0001	.0087	CAN

KILLED STEEL.  
MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT.

KILLED STEEL, PRODUCED TO A FINE GRAIN PRACTICE  
MTR EN 10204:2004 INSPECTION CERTIFICATE 3.1 COMPLIANT  
CTL IN CANADA FROM COIL MADE AND POURED IN U.S.A.  
MATERIAL MARKED BELOW WITH AN ASTERISK IS PRODUCED FROM COIL

### PRODUCTS SHIPPED:

* E7G046	0966	PCES: 9, LBS:	14706	* A7H022	0202	PCES: 9, LBS:	14706
* B7H542	0203	PCES: 18, LBS:	29412	* W7G550	0243	PCES: 9, LBS:	14706
* A7H056	0294	PCES: 5, LBS:	8170				

(b) Cust Part #:

WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION

Daryl Banman

CHECKED BY

#4911

# Eaton Steel Bar Company Inspection Certificate 1682448

EN 10204:2004-3.1

Customer	BOL	Ship Date	Customer PO	Item	Customer Item	Item Description
	221248	21-Nov-2017	B38384	11132 rev 004	V122432	1-3/4 HR RD 4140/2MM 24H SBO QTSF FG MST

All bundles listed below were produced using steel from Heat 75069193 issued by GERDAU-MONROE and were completed from Eaton Steel Job 826591.

Chemistry	Description	Value	Units	Mechanical	Description	Value	Units
C	Carbon	0.4000	PMGT	TENSILE PSI	Tensile Strength in PSI Units	141000	PSI
Mn	Manganese	0.8600	PMGT	YIELD PSI	Yield Strength in PSI Units	123300	PSI
P	Phosphorus	0.01300	PMGT	ELONGATION	Percent Elongation	21.00	PCT
S	Sulfur	0.02100	PMGT	REDUCTION	Percent Reduction in Area	61.0	PCT
Si	Silicon	0.24000	PMGT	BRINELL SURF	Brinell Surface	297.0	BN
Ni	Nickel	0.19000	PMGT	Heat Treating	Description	Value	Units
Cr	Chromium	0.98000	PMGT	TEMPER TEMP F	Temper Temp in Fahrenheit	500 - 2500	DEGF
Mo	Molybdenum	0.16000	PMGT	AUSTEN TEMP F	Austenitize Temp in Fahrenheit	1600 - 1700	DEGF
Al	Aluminum	0.02000	PMGT	SR TEMP F	Stress Relief Temp in Fahrenheit	500 - 2500	DEGF
Cu	Copper	0.22000	PMGT	MAGNETISM HT	Magnetism in Gauss	0 - 20	GN
V	Vanadium	0.00300	PMGT	TIME AT TEMP	Time at Temperature	Report	
Cb	Columbium	0.00300	PMGT	QUENCH MEDIA	Quench Media Requirements	PERM/O	
N	Nitrogen	0.00000	PMGT	STRESS FREE	Cert stress free	CERTIFIED	
P+8	Element Sum Limit	0.03400	PMGT	HT140-42QT	Quench & Temper	CONFORMS	
DI	Ideal Diameter	5.22000	IN	Mill Processing	Description	Value	Units
Cleanliness	Description	Value	Units	MELT COUNTRY	Melted in Country	USA	
MACRO ETCH	Report macro etch results.	Value	Units	ROLLED COUNTRY	Rolled in Country	USA	
Geometry	Description	Value	Units	RED RATIO	Reduction Ratio	28.30	RED
DIMETER	Diameter	1.7344 - 1.7656	IN	ASTM Standard	Description	Value	Units
Jominy	Description	Value	Units	A193/193M-01	Grade B7	CONFORMS	
J1	1/16 inch from Quenched End	56	HRC	A434-90a-BC	ASTM BC Tensile and Yield properties	Value	Units
J2	2/16 inch from Quenched End	56	HRC	Structure	Percent Tempered Martensite	80 - 100	PCT
J3	3/16 inch from Quenched End	56	HRC	PERCENT TM	Reported Microstructure	Length	
J4	4/16 inch from Quenched End	56	HRC	TAG NUMBER	Qty	Units	
J5	5/16 inch from Quenched End	56	HRC	022-2144708	3940	LBS	24ft.2in
J6	6/16 inch from Quenched End	56	HRC				
J7	7/16 inch from Quenched End	55	HRC				
J8	8/16 inch from Quenched End	54	HRC				
J9	9/16 inch from Quenched End	53	HRC				
J10	10/16 inch from Quenched End	51	HRC				
J11	11/16 inch from Quenched End	50	HRC				
J12	12/16 inch from Quenched End	49	HRC				
J14	14/16 inch from Quenched End	47	HRC				
J16	16/16 inch from Quenched End	45	HRC				
J18	18/16 inch from Quenched End	44	HRC				
J20	20/16 inch from Quenched End	43	HRC				
J22	22/16 inch from Quenched End	43	HRC				
J24	24/16 inch from Quenched End	41	HRC				
J28	28/16 inch from Quenched End	39	HRC				
J32	32/16 inch from Quenched End	37	HRC				

Bundle tags with Eaton Steel Identifiers reference the steel grade, heat, purchase order number where applicable, part number, product description and quantity. Material produced in accordance with Eaton Steel's Quality Manual QM-00002 Rev 0 dated 11/27/2013.

We hereby certify the above to be in conformance, and a true copy of data represented in company records. This steel was not subject to weld repair or exposed to mercury while in the possession of Eaton Steel.

Created on 21-Nov-2017  
Thomas Snodas, Corporate Metallurgist

This document was prepared by means of electronic data processing and is valid without signature.

10221 Capital Avenue, Oak Park, MI 48237 USA  
http://www.eatonsteel.com

Tel: 248-398-3434  
Fax: 248-398-1434



GERDAU SPECIAL STEEL NORTH AMERICA  
5591 MORRILL ROAD  
JACKSON, MICHIGAN 49201

CERTIFIED MATERIAL TEST REPORT

CUSTOMER ORDER NUMBER	10902/4140/42NM	GERDAU PART NUMBER	35069193	WELD ORDER NUMBER	314676 101	DATE	10/19/17
164576			210mm Billet				

SHIP TO

REPORT TO  
PATRICE GRAFTON  
EATON STEEL CORPORATION  
10221 CAPITAL

EATON STEEL CORPORATION  
C/O APOLLO HEAT TREAT  
10400 CAPITAL STREET

OAK PARK, MI 48237

OAK PARK, MI 48237

ORDERED

GRADE	1 3/4"	ASTM	RND	LENGTH	24' 2"
-------	--------	------	-----	--------	--------

SPECIFICATION 10902 REVISION 5, 12/12/13; A304-16; A322-13

CHEMICAL ANALYSIS

C	Mn	P	S	Si	Ni	Cr	Mo	Cu	Sn	Al
0.40	0.86	0.013	0.021	0.24	0.19	0.98	0.16	0.22	0.009	0.020
V	Nb									
0.003	0.003									

GRAIN SIZE SPECIFICATION ASTM E112 FINE GRAIN 5-8

HARDENABILITY SPECIFICATION ASTM A255/A304

THEORETICAL																								
J1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32	34
56	56	56	56	56	56	55	54	53	51	50	49	48	47	46	45	44	43	43	41	41	39	39	37	

DI CALCULATION SPECIFICATION CAT 1E0024

5.22

REDUCTION RATIO SPECIFICATION ITEM 10902

RATIO= 28.3 TO 1.0

PAGE 1

We certify that these data are correct and in compliance with specified requirements.

Gerdau North America  
1000 East Front Street  
Monroe, MI 48166  
Patrick Doyle Patrick Doyle

CONTINUED ON PAGE 2



GERDAU

GERDAU SPECIAL STEEL NORTH AMERICA  
5551 MORRILL ROAD  
JACKSON, MICHIGAN 49201

CERTIFIED MATERIAL TEST REPORT

CUSTOMER ORDER NUMBER	CUSTOMER PART NUMBER	TEST NUMBER	WEEK ORDER NUMBER	DATE
164576	10902/4140/42MM	75069193	314676 101	10/19/17

210mm Billet

SHIP TO

REPORT TO  
PATRICE GRAFTON  
EATON STEEL CORPORATION  
10221 CAPITAL

EATON STEEL CORPORATION  
C/O APOLLO HEAT TREAT  
10400 CAPITAL STREET

OAK PARK, MI 48237

OAK PARK, MI 48237

ORDERED

GRADE	SIZE	RND	LENGTH
4140	1 3/4"	RND	24' 2"

SPECIFICATION 10902 REVISION 6, 12/12/13; A304-16; A322-13

RESIDUAL MAX SPECIFICATION ITEM 10902

P+S = 0.0340

RESIDUAL MIN SPECIFICATION ITEM 10902

P+S = 0.0340

MELTED/ROLLED @ GERDAU MONROE; MEETS SAE J422 S5/O5 RATING  
(WORST FIELD); ASTM E381 MACRO ETCH SATISFACTORY; 91/R1/C1; ASTM A29/A29M-16  
\*\* MATERIAL 100% MELTED AND MANUFACTURED IN THE U.S.A. BY THE ELECTRIC

ARC FURNACE AND CONTINUOUS CASTING METHOD. THE PRODUCT HAS NOT  
BEEN REPAIRED BY WELDING AND THIS MATERIAL HAS NOT BEEN EXPOSED  
TO MERCURY OR TO ANY OTHER METAL ALLOY THAT IS LIQUID AT AMBIENT  
TEMPERATURES DURING PROCESSING OR WHILE IN OUR POSSESSION.  
GERDAU MONITORS ALL INCOMING SCRAP AND ALL HEATS OF STEEL TO ENSURE THAT  
PRODUCTS SHIPPED ARE FREE OF RADIOACTIVE MATERIAL.

PAGE 2 OF 2

We certify that these data are correct and in compliance with specified requirements.

Gerdau Monroe  
3800 Eastbrook Street  
Monroe, MI 48156  
  
Patrick Doyle Patrick Doyle  
Quality Assurance Inspector

# Lab Services Report



10221 Capital Avenue  
Oak Park, MI 48237  
(248)543-3578 telephone  
(248)398-1434 facsimile

Bill To: Apollo Heat Treating and  
Processing Company, L.L.C  
10400 Capital Avenue  
Oak Park, MI

Ship To: Apollo Heat Treating and  
Processing Company, L.L.C  
10400 Capital Avenue  
Oak Park, MI

Attn: Randy Gail  
rcall@apollobp.com

Report Date: 11/6/2017  
Report ID: 17-4353  
Request ID:

This report contains results for the indicated services performed on the following sample(s).

Part No.	11132	Final	HR	Shape	Round	PC #	826531
Size	1.750	1.750	4140	Weld Overlay	826531		
Titan Sample ID	17-4353-1	75089183	826531	JOB 3088			

*Steve Avery*

Report Approved By: Steve Avery

## Mechanical Testing

ASTM E8M-16a

ASTM E10-17

Sample ID	Ultimate Tensile Strength	0.2% Offset Yield Strength	Elongation in 2 in.	Reduction of Area, %	Hardness
17-4353-1	141,000	123,300	21	61	297

Test Comments

Mechanicals tested at Midradius



Calibration Number 2007-01  
Testing Laboratory

Any services within a section marked with \* are not part of Titan Metallurgy's current AZLA accreditation.  
All testing performed by Titan Metallurgy was done at ambient (room) temperature.

Report ID: 17-4353  
Page 1 of 1



10400 Capital Avenue • Oak Park, Michigan 48237 • (248) 398-3434


### CERTIFICATION OF HEAT TREATMENT

Date: 11 / 14 / 2017  
Certification Number: 17 - 0803  
Customers Order Number: 825531  
Part Number: 10902 - 11132  
Heat Number: 75069193  
Heat Treat Job Number: 3088

Material: 4140  
Quantity: 324 Pcs.  
Weight: 64,388 Lbs.  
Description: 1.7500" Diameter x 24' 3" Length  
Per Specification: ESH HT4140 - 42QT

	Temperature	Time at Heat	Coolant
Normalized	N/A		
Preheat	N/A		
Austenitized/Hardened	1550 °F	45 Minutes	
Spray Quenched	103.0 °F - 104.9 °F	N/A	Water
Temper	1220 °F	1 Hour 15 Minutes	Air Cooled to Ambient
Temper	N/A		

Method of heat treat monitor, set point thermocouple (Type K). Equipment calibrated per AMS2750E.  
We hereby certify the above material has been treated in the manner described are correct as  
contained in the records of Apollo Heat Treating and Processing, LLC.

  
Randy L. Call  
Plant Manager  
Apollo Heat Treating & Processing, LLC



#4949

# Eaton Steel Bar Company Inspection Certificate 1691379

EN 10204:2004-3.1

Customer	BOL	Ship Date	Customer PO	Item	Customer Item	Item Description
	223252	09-Jan-2018	B39362	11144 rev 003	9/16-R40C	3/4 HR RD 4140/42MM 20H2in SBO QTSF FG MST

All bundles listed below were produced using steel from Heat M52574 issued by GERDAU-MONROE and were completed from Eaton Steel Job 608632.

Chemistry	Description	Value	Units	Mechanical -	Description	Value	Units
C	Carbon	0.41000	PMGT	TENSILE PSI	Tensile Strength in PSI Units		PSI
Mn	Manganese	0.65000	PMGT	YIELD PSI	Yield Strength in PSI Units		PSI
P	Phosphorus	0.01200	PMGT	ELONGATION	Percent Elongation		PCT
S	Sulfur	0.02000	PMGT	REDUCTION	Percent Reduction in Area		PCT
Si	Silicon	0.26000	PMGT	BRINELL SURF	Brinell Surface	286.0	BRN
Ni	Nickel	0.09000	PMGT	Heat Treating	Description		Units
Cr	Chromium	1.00000	PMGT	TEMPER TEMP F	Temper Temp in Fahrenheit	500 - 2500	DEGF
Mo	Molybdenum	0.18000	PMGT	AUSTEN TEMP F	Austenitize Temp in Fahrenheit	1600 - 1700	DEGF
Al	Aluminum	0.04900	PMGT	SR TEMP F	Stress Relief Temp in Fahrenheit	500 - 2500	DEGF
Cu	Copper	0.21000	PMGT	MAGNETISM-HT	Magnetism in Gauss	0 - 20	GN
V	Vanadium	0.00200	PMGT	TIME AT TEMP	Time at Temperature		Report
Co	Columbium	0.00200	PMGT	QUENCH MEDIA	Quench Media Requirements	P&W/O	
N	Nitrogen	0.00000	PMGT	STRESS FREE	Cert stress free	CERTIFIED	
P+S	Element Sum Limit	0.03200	PMGT	HT4140-42QT	Quench & Temper	CONFORMS	
DT	Ideal Diameter	5.31000	IN	MELT COUNTRY	Melted in Country	USA	
Cleanliness	Description	Value	Units	ROLLED COUNTRY	Rolled in Country	USA	
MACRO ETCH	Report macro etch results.			RED RATIO	Reduction Ratio	81.50	RED
Geometry	Description	Value	Units	ASTM Standard	Description	Value	Units
DIAMETER	Diameter	0.7420 - 0.7580	IN	A434-90a-BC	ASTMA BC Tensile and Yield properties	CONFORMS	
Jominy	Description	Value	Units	PERCENT TM	Percent Tempered Martensite	80 - 100	PCT
J1	1/16 inch from Quenched End	57	HRC	MICROSTRUCTURE	Reported Microstructure	3950 LBS	
J2	2/16 inch from Quenched End	57	HRC	Tag Number	Qty Units	Length	
J3	3/16 inch from Quenched End	57	HRC	023-217135		20Tc	
J4	4/16 inch from Quenched End	57	HRC				
J5	5/16 inch from Quenched End	57	HRC				
J6	6/16 inch from Quenched End	57	HRC				
J7	7/16 inch from Quenched End	57	HRC				
J8	8/16 inch from Quenched End	55	HRC				
J9	9/16 inch from Quenched End	54	HRC				
J10	10/16 inch from Quenched End	52	HRC				
J11	11/16 inch from Quenched End		HRC				
J12	12/16 inch from Quenched End	50	HRC				
J14	14/16 inch from Quenched End	48	HRC				
J16	16/16 inch from Quenched End	46	HRC				
J18	18/16 inch from Quenched End	45	HRC				
J20	20/16 inch from Quenched End	45	HRC				
J22	22/16 inch from Quenched End		HRC				
J24	24/16 inch from Quenched End	43	HRC				
J28	28/16 inch from Quenched End	40	HRC				
J32	32/16 inch from Quenched End	38	HRC				

Bundle tags with Eaton Steel identifies reference the steel grade, heat, purchase order number where applicable, part number, product description and quantity. Material produced in accordance with Eaton Steel's Quality Manual QM-00002 Rev 0 dated 11/21/2013.

We hereby certify the above to be in conformance, and a true copy of data represented in company records. This steel was not subject to weld repair or exposed to mercury while in the possession of Eaton Steel.



GERDAU SPECIAL STEEL NORTH AMERICA  
5521 MORRILL ROAD  
JACKSON, MICHIGAN 49201

CERTIFIED MATERIAL TEST REPORT

CUSTOMER ORDER NUMBER	GERDAU ALF NUMBER	TEST NUMBER	MOCK ORDER NUMBER	DATE
142324	1012462/4140EVD	M52574	283416 102	11/05/13
		Daniel Cast		

REPORT TO

DAN MCNAUGHTON  
EATON STEEL CORPORATION  
10221 CAPITAL  
OAK PARK, MI 48237

SHIP TO

EATON STEEL CORPORATION  
VULCAN HEAT TREATING  
10 CROSSCREEK TRAIL  
PELHAM, AL 35124

ORDERED

ITEM	SIZE	THICKNESS	LENGTH
4140	0 3/4"	RND	20' 2"

ITEM 1012462 REV 1 DTD 03/05/13 A29/A29M-12; A322-07

CHEMICAL ANALYSIS

	C	Mn	P	S	Si	Ni	Cr	Mo	Cu	Sn	Al
0.41	0.85	0.012	0.020	0.26	0.09	1.00	0.18	0.21	0.008	0.049	
V	Nb										
0.002	0.002										

GRAIN SIZE

SPECIFICATION ASTM E112

FINE GRAIN 5-8

HARDENABILITY

SPECIFICATION ASTM A255/A304

THEORETICAL	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32	34
31	2	3	4																		
57	57	57	57	57	57	55	54	52	50	48	46	45	45	43	40	38					

DI CALCULATION

SPECIFICATION CAT 1B0024

5.31

REDUCTION RATIO

SPECIFICATION ITEM 1012462

RATIO= 81.5 TO 1.0

PAGE 1

We certify that these data are correct and in compliance with specified requirements.

Gerdau Monroe  
3000 East Front Street  
Monroe, MI 48161

Quality Assurance Representative

*Wendy J. Craig*

Wendy J. Craig

CONTINUED ON PAGE 2



GERDAU SPECIAL STEEL NORTH AMERICA  
5591 MORRILL ROAD  
JACKSON, MICHIGAN 49201

CERTIFIED MATERIAL TEST REPORT

CUSTOMER ORDER NUMBER	CUSTOMER PART NUMBER	DATE ORDERED	QUANTITY ORDERED	DATE
142324	1012462/4140EPVD	M52574	283416 102	11/05/13

REPORT TO  
DAN MCNAUGHTON  
EATON STEEL CORPORATION  
10221 CAPITAL  
OAK PARK, MI 48237

SHIP TO  
EATON STEEL CORPORATION  
VULCAN HEAT TREATING  
10 CROSSCREEK TRAIL  
PELHAM, AL 35124

ORDERED

GRADE	SIZE	RND	LENGTH
4140	0 3/4"	RND	20' 2"

ITEM 1012462 REV 1 DTD 03/05/12; A29/A29M-12; A322-07

RESIDUAL MAX SPECIFICATION ITEM 1012462

P+S = 0.0320

RESIDUAL MIN SPECIFICATION ITEM 1012462

P+S = 0.0320

ASTM E381 MACRO ETCH SATISFACTORY: S1/R1/C1; MEETS SAE J422

SS/05 RATING (WORST FIELD):

\*\* MATERIAL 100% MELTED AND MANUFACTURED IN THE U.S.A. BY THE ELECTRIC ARC FURNACE AND CONTINUOUS CASTING METHOD. THE PRODUCT HAS NOT BEEN REPAIRED BY WELDING AND THIS MATERIAL HAS NOT BEEN EXPOSED TO MERCURY OR TO ANY OTHER METAL ALLOY THAT IS LIQUID AT AMBIENT TEMPERATURES DURING PROCESSING OR WHILE IN OUR POSSESSION. GERDAU MONITORS ALL INCOMING SCRAP AND ALL HEATS OF STEEL TO ENSURE THAT PRODUCTS SHIPPED ARE FREE OF RADIOACTIVE MATERIAL.

PAGE 2 OF 2

We certify that these data are correct and in compliance with specified requirements.

Gerdau Monroe  
3000 East Front Street  
Monroe, MI 48161

*Wendy J. Craig*  
Quality Services Representative  
Wendy J. Craig



**Vulcan Threaded Products**  
 10 Cross Creek Trail  
 Phenix, AL 35126  
 Tel (205) 825-9100  
 Fax (205) 825-9150

# JOB MATERIAL CERTIFICATION

Job No: 344313

Job Information

Certified Date: 12/7/13

Container: S7520422 S7528364 S7528828

Customer: Eaton Steel Corporation

20601 Trolley Industrial  
 Ship To: Drive  
 Taylor, MI 48180

Customer Part No: 1012463-001

Customer PO No: 143438-75373

Order No: 201403

Shipped Qty: 24619 lbs

Line No: 1

Note: **W0753733**

## Part Information

Part No: HRB 4140 750240 Q&T ES

Part Group: HT TOLL

Piece Weight: 30.059

Name: Hot Roll Bars

Alloy Type: 4100

Alloy - Temper: 4140 -

## Applicable Specifications

Type: ASTM A193 B7/ASME SA193 B7

Customer Specification

Rev: 2012a

Amend:

Option:

## Test Results

See following pages for tests

## Certified Chemical Analysis


Fe	C	Mn	P	S	Si	Al	Ni	Cr	Mo	Cu	Ca	Mg	Co	As	Se	Sn	Bi	Pb	Ag	Au	Other	Notes
0.0008	0.25	0.010	0.008	0.005	0.25	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	

## Notes

Material was manufactured, tested and inspected in accordance with Vulcan Threaded Products Inc. Quality Assurance Program and Manual Rev. A, dated 12/2011. Material was manufactured in Phenix, AL and is Quenched and Tempered - Stress Free. No weld repair performed on the material. No Mercury used in the production of this material. Material Manufactured in the USA.

Average Grain Reading: <15  
 The microstructure consisted of 100% tempered martensite from the surface to the center.  
 Aut tempering temp. >1700 degrees F.  
 Test specimens meet the ASTM A370-12a specifications

cert 377068

		Vulcan Threaded Products 10 Cross Creek Trail Phenix, AL 36124 Tel (205) 820-5100 Fax (205) 820-5150	
<b>THREADED PRODUCTS, INC.</b>		<b>JOB MATERIAL CERTIFICATION</b>	
Job No: 344313 Containers: S7520422 S7526364 S7526926		Job Information Certified Date: 12/7/13	
<b>Test Results</b>			
Test No: 25760 Test: Quench & Temper Physicals (lbs)			
Description	Temple	Yield 0.3%	Elongation (%)
Quench & Temper	142,800	126,000	17.8
Physicals Results			
Test No: 25759 Test: Quench & Temper Information (lbs)			
Description	Temple	Run Speed (FPM)	Quench Water Temp (F)
Quench & Temper Information Results	1317	43.50	87.9
Date: 12/7/13 Signature: <i>David Chmielewski</i> Chmielewski, David - Supervisor			Date: 12/7/13 Print Online 12/7/13 8:43 AM vulcan.com Page 2 of 2